

# Journal of Materials Chemistry C

Materials for optical, magnetic and electronic devices

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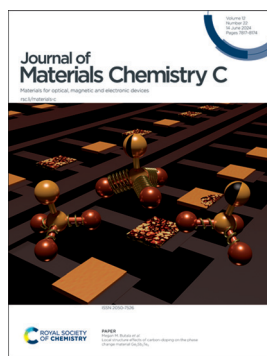
## IN THIS ISSUE

ISSN 2050-7526 CODEN JMCCCX 12(22) 7817-8174 (2024)



### Cover

See Jing Xiao, Jing Ren *et al.*, pp. 7833–7844.  
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### Inside cover

See Megan M. Butala *et al.*, pp. 7867–7877.  
Image reproduced by permission of John D. Langhout and Megan M. Butala from *J. Mater. Chem. C*, 2024, 12, 7867.

## EDITORIAL

7830

### Themed collection on molecular scale electronics

Timothy A. Su,\* Michael S. Inkpen\* and Haixing Li\*



Tim Su



Michael Inkpen



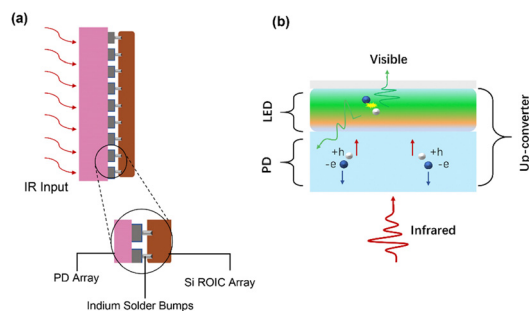
Haixing Li

## REVIEWS

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### Optical up-conversion devices based on organic and inorganic quantum dot materials

Jing Xiao,\* Zhaoyang Yin, Zhenyu Tang, Zhigang Gao, Lian Zhang and Jing Ren\*



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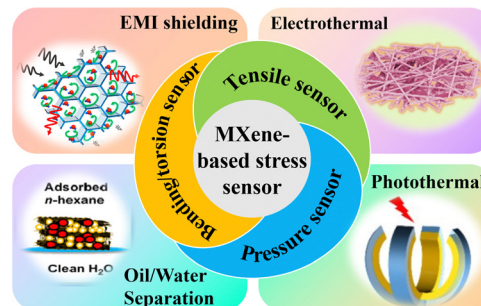
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Fundamental questions  
Elemental answers

## REVIEWS

7845

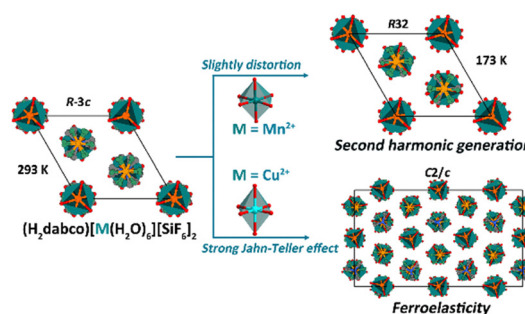
## Advances in multifunctional flexible MXene-based stress sensors

Wenke Yang, Shun Liu, Yalong Wang, Hu Liu,\*  
Chuntai Liu\* and Changyu Shen

## COMMUNICATION

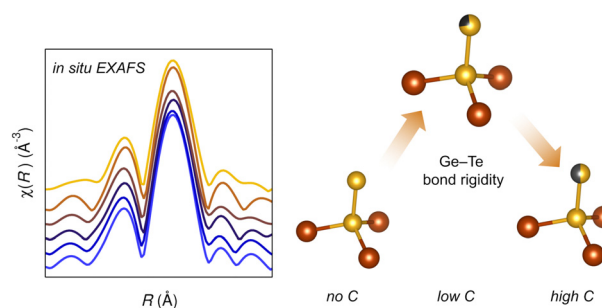
7862

## Metal ion-dependent structural phase transition and impact of the Jahn–Teller effect in two organic–inorganic hybrid compounds

Shi-Qing Yin, Yu-Qiao Tong, Qian-Jun Gu, Ya-Juan Li,  
Bo Huang\* and Ai-Xin Zhu\*

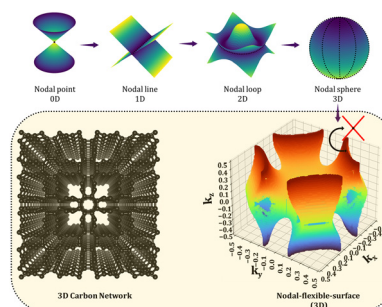
## PAPERS

7867

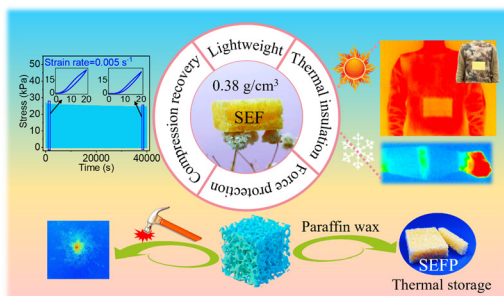
Local structure effects of carbon-doping on the phase change material Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub>John D. Langhout, Danielle N. Alverson, Colton Ginter,  
Bruce Ravel, David P. Adams and Megan M. Butala\*

7878

## A nodal flexible-surface three-dimensional carbon network with potential applications as a lithium-ion battery anode material

Naga Venkateswara Rao Nulakani, Arka Bandyopadhyay  
and Mohamad Akbar Ali\*

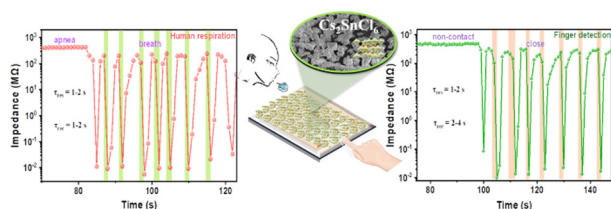
7891



### A lightweight porous shear stiffening composite foam with excellent mechanical–thermal coupling protection performance

Tingting Xuan, Sheng Wang,\* Shuai Liu, Wenhui Wang, Zimu Li, Yuan Hu and Xinglong Gong\*

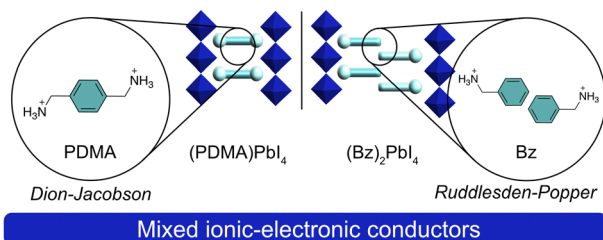
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### Halide-dependent humidity sensing of Cs<sub>2</sub>SnX<sub>6</sub> (X = Cl, Br, I) perovskites for real-time human physiological moisture detection

Chen-Chen Guo, Chao-Jie Wang, Le-Xi Zhang,\* Qi-Da Qiu, Meng-Ya Zhu, Jing Yin and Li-Jian Bie\*

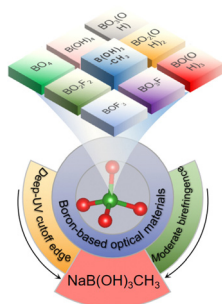
7909



### Mixed ionic–electronic conduction in Ruddlesden–Popper and Dion–Jacobson layered hybrid perovskites with aromatic organic spacers

Algirdas Dučinskas, Mina Jung, Ya-Ru Wang, Jovana V. Milić,\* Davide Moia,\* Michael Grätzel\* and Joachim Maier\*

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### NaB(OH)<sub>3</sub>CH<sub>3</sub>: a deep-ultraviolet optical crystal with unprecedented methyl-modified [B(OH)<sub>3</sub>CH<sub>3</sub>] units

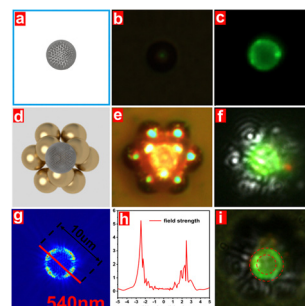
Chenhui Hu, Huimin Li, Jian Han,\* Xueling Hou, Zhihua Yang and Shilie Pan\*



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### Significant enhancement of the photon upconversion of a single fluorescent microsphere *via* annular near-field localization

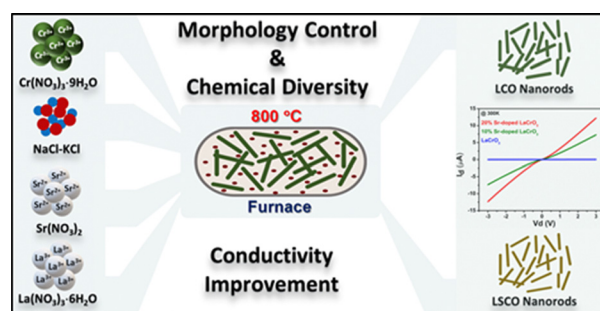
Chuangxin Wu, Jiujie Zeng, Guozheng Nie, Shiping Zhan,\* Xiaofeng Wu and Yunxin Liu\*



7927

### Template-free molten salt synthesis of pure and Sr-doped $\text{LaCrO}_3$ 1D nanorods with enhanced electrical transport properties

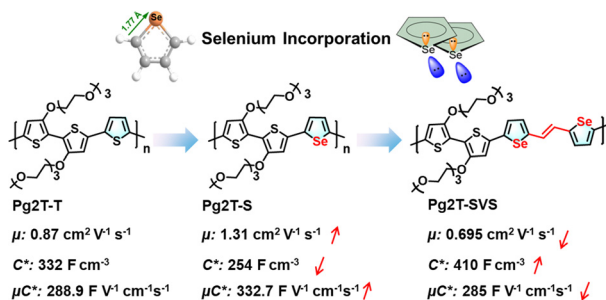
Kuldeep Kumar, Leela S. Panchakarla and Sanjog S. Nagarkar\*



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### Effects of selenium incorporation on the performance of polythiophene based organic electrochemical transistors

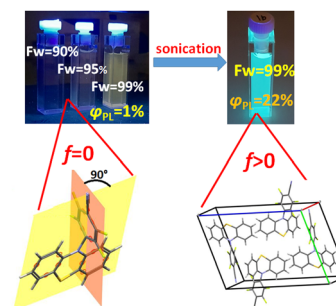
Meisi Li, Wang Feng, Yu Lan, Yimin Sun, Ping Li,\* Jianfeng Li, Wanli Yang, Hongxiang Li, Junqiao Ding and Jianhua Chen\*



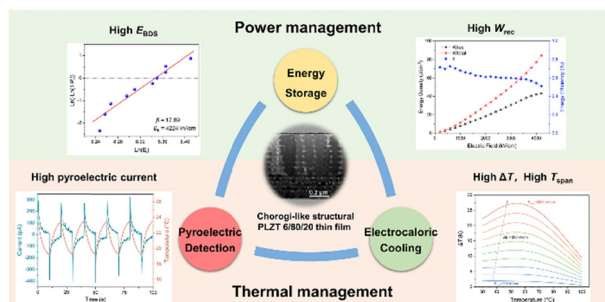
7943

### Sonocrystallization induced thermally activated delayed fluorescence *via* distortion of molecular geometry

Antonio Maggiore,\* Yangyang Qu, Piotr Pander, Fernando B. Dias, Gilles Clavier, Regis Guillot, Davide Altamura, Cinzia Giannini, Vincenzo Maiorano, Pierre Audebert and Fabien Miomandre



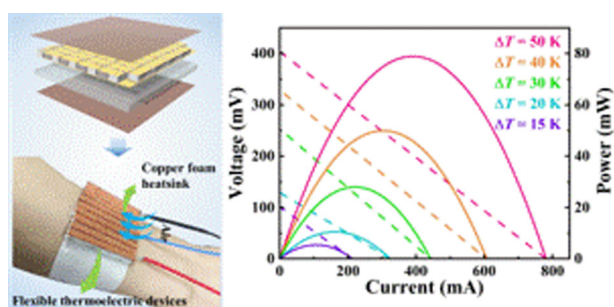
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### A multifunctional oriented nanocrystalline $\text{Pb}_{0.91}\text{La}_{0.06}\text{Zr}_{0.8}\text{Ti}_{0.2}\text{O}_3$ relaxor ferroelectric thin film for chip power and thermal management

Yuxuan Hou, Junjie Li, Ruowei Yin, Xiaopo Su, Yanjing Su, Lijie Qiao, Chuanbao Liu, Qian Li and Yang Bai\*

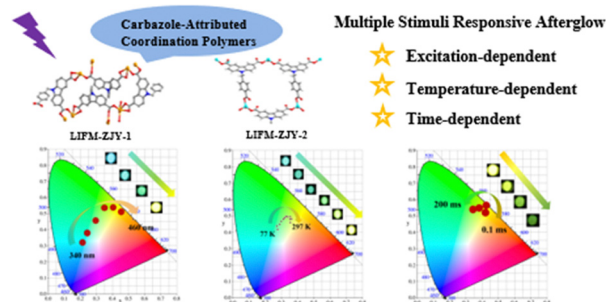
7966



### High-performance flexible thermoelectric devices with a copper foam heatsink for personal thermal management

Wenjie Zhou, Kaikai Pang, Yuyou Zhang, Chuandong Zhou, Zongwei Zhang, Hao Yang, Qiang Zhang, Yanan Li, Haoyang Hu,\* Xiaojian Tan,\* Peng Sun, Jiehua Wu, Guoqiang Liu and Jun Jiang\*

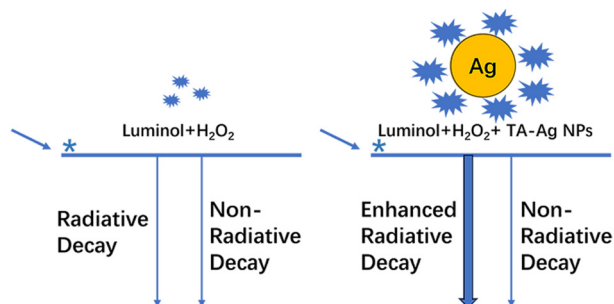
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### Multiple stimuli responsive afterglow in carbazole-attributed coordination polymers

Jia-Yi Zhuang, Zhong-Hao Wang, Yan-Ting Huang, Qiang-Sheng Zhang and Mei Pan\*

7981



### Significant chemiluminescence enhancement by tannic acid functionalised plasmonic silver nanoparticles

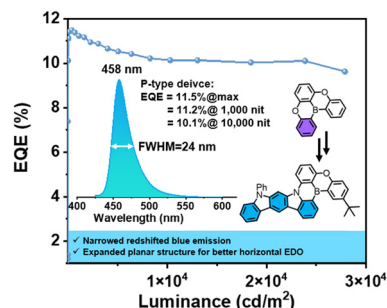
Yao Lu, Jiamin Xu, D. Jason Riley and Fang Xie\*



7989

### A high-efficiency blue multiple resonance emitter with enhanced horizontal emitting dipole orientation based on indolocarbazole

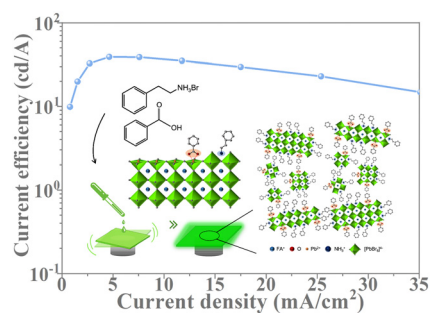
Tianjiao Fan, Qiwei Liu, Lian Duan and Dongdong Zhang\*



7996

### A dual ligand synergism strategy for fabrication of highly luminescent FAPbBr<sub>3</sub> nanocrystal films and efficient electroluminescent devices

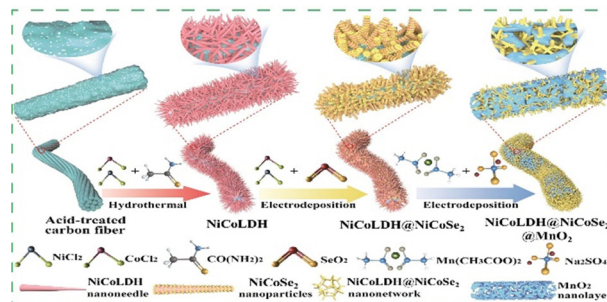
Cuihe Fan, Feng Zhang,\* Zhengwei Cao, Jiaqi Liu and Yuying Hao\*



8004

### Alternately electrodeposited mesoporous NiCoSe<sub>2</sub>@MnO<sub>2</sub> nanocomposite-anchored Ni–Co layered double hydroxide nanoneedles for hybrid supercapacitors

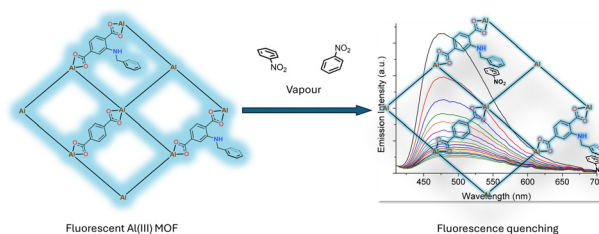
Fangqiao Wang, Zhibo Zhao, Xiaoguang Fu, Baobao Li, Zhuomin Chen, Senjing Wang, Qiaoling Huang, Qingchi Xu\* and Meidan Ye\*



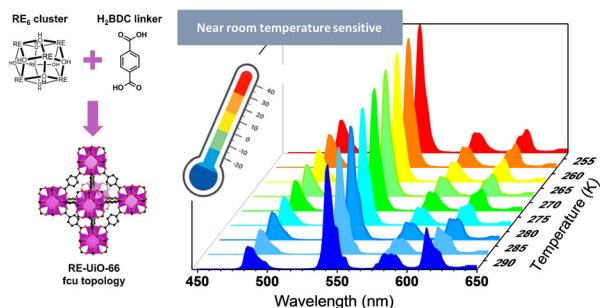
8014

### Functionalised Al(III) metal organic frameworks for fluorescence sensing of nitroaromatic vapours

Amina Haj-Yahya, Dimitra Kouskouki, Antigoni G. Margellou, Evangelos K. Andreou, Gerasimos S. Armatas and Theodore Lazarides\*



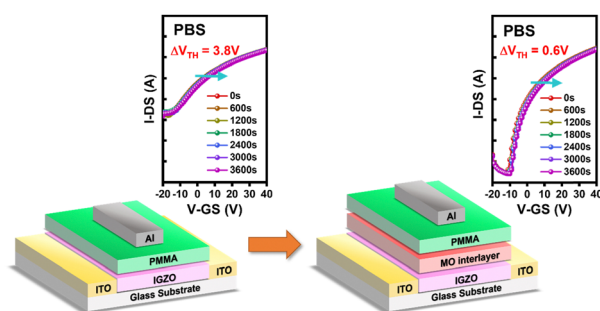
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### Rare-earth UiO-66 for temperature sensing near room temperature

Elias Djanffar, Hudson A. Bicalho, Zvart Ajoyan, Ashlee J. Howarth\* and H el ene Serier-Brault\*

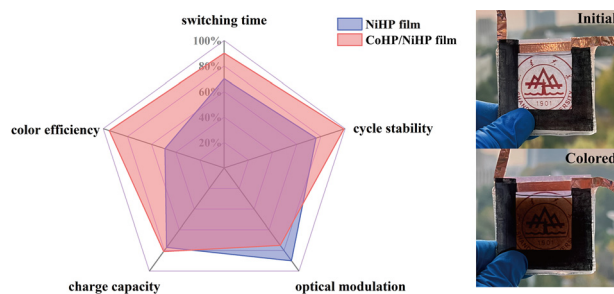
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### A dual function metal oxide interlayer as an oxygen-defect inhibitor and a gate-leakage suppressor for a hysteresis-free, solution-processed top-gated IGZO TFT

Saravanan Kumaran, Bernice Karsten, Michael Zharnikov and Yian Tai\*

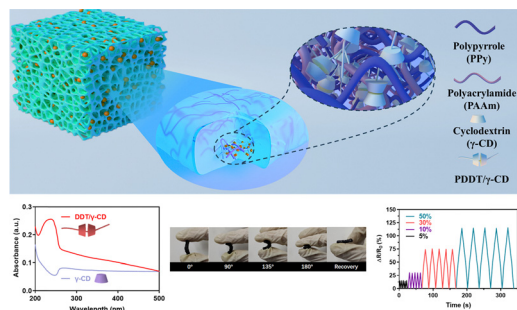
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### Design of cobalt phosphate/nickel phosphate films with improved electrochromic performance

Xiaotong Chi, Dairong Chen, Ting Wang\* and Xiuling Jiao\*

8054



### PPDA hybrid: a flexible and biocompatible platform for supercapacitor and strain sensing applications

Zhongwen Luo, Wenchao Ye, Feng Long, Wenlang Liang\* and Yongxiang Leng

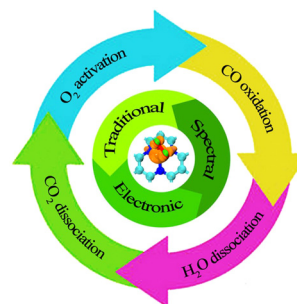




8067

## Quantum chemical studies of transition metal single-atom catalysts: exploration of catalytic descriptors

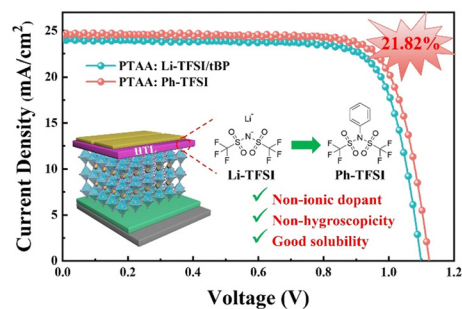
Bo Li, Mingyue Zheng, Shichen Lin, Feng Long Gu, Jun Jiang and Chuanyi Jia\*



8078

## Replacing Li<sup>+</sup> in Li-TFSI with a benzene ring: constructing non-ionic p-dopants for stable and efficient perovskite solar cells

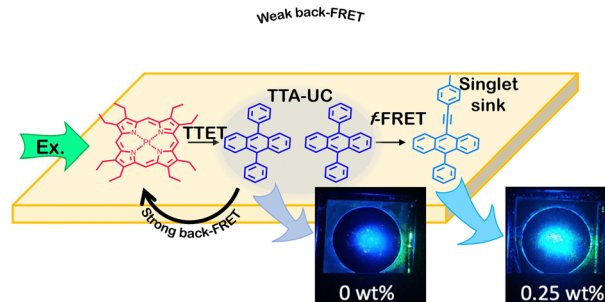
Zhongquan Wan,\* Shaoliang Jiang, Hui Lu, Jinqing Zhu, Yuanxi Wang, Huaibiao Zeng, Haomiao Yin, Runmin Wei, Junsheng Luo\* and Chunyang Jia\*



8087

## A rationally designed singlet sink for glassy polymeric photon upconverting films

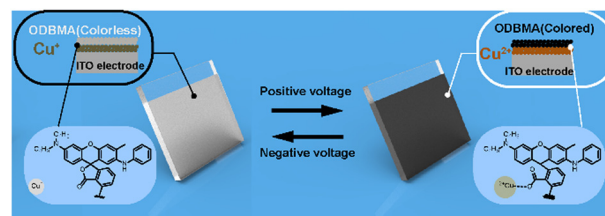
Sonia T. Stanciu, Steponas Raišys, Karolis Kazlauskas and Yoan C. Simon\*



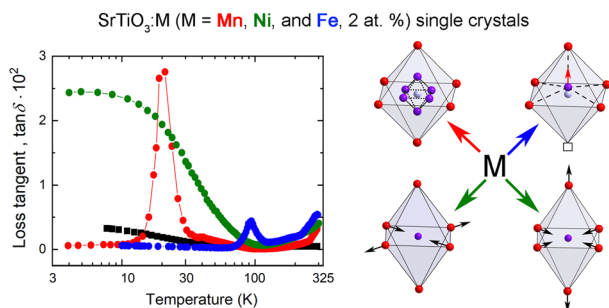
8098

## A black electrochromic device based on a CuI film for energy-efficient applications

Ruipeng Shen, Yingai Li, Yu-Mo Zhang\* and Sean Xiao-An Zhang\*



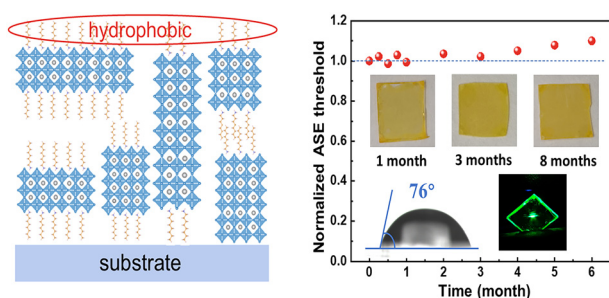
8105



### Transition metal-doped SrTiO<sub>3</sub>: when does a tiny chemical impact have such a great structural response?

Mikhail V. Talanov,\* Adam I. Stash, Sergey A. Ivanov, Elena S. Zhukova, Boris P. Gorshunov, Boris M. Nekrasov, Alexander V. Melentev, Vladislav I. Kozlov, Valery M. Cherepanov, Sergey Yu. Gavrilkin, Aleksey Yu. Tsvetkov, Ilya A. Zavidovskiy, Mikhail K. Tatmyshevskiy, Maxim Savinov, Valeriy M. Talanov and Alexander A. Bush

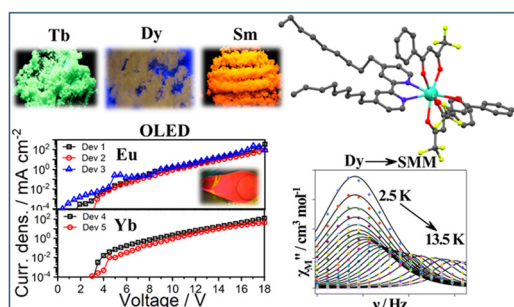
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### Long-term air-stable amplified spontaneous emission in quasi-2D perovskite films through ligand engineering

Xiaofeng Chen,\* Ji Qin, Xinyang Wang, Yanfei Shu, Ming Li, Ping Zhou, Guochao Lu\* and Haiping He\*

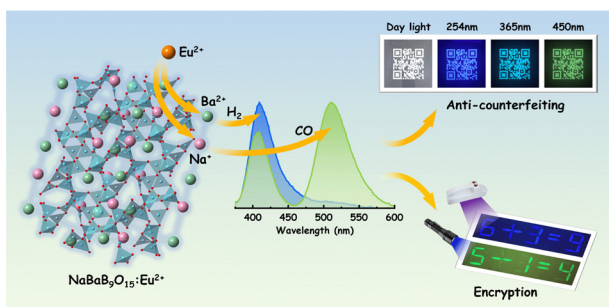
8127



### Slow magnetic relaxation and luminescence properties in $\beta$ -diketonate lanthanide(III) complexes. Preparation of Eu(III) and Yb(III) OLED devices

Ànnia Tubau, Laura Rodríguez, Piotr Pander, Lucy Weatherill, Fernando B. Dias, Mercè Font-Bardia and Ramon Vicente\*

8145



### Unlocking color-tunable emission of Eu<sup>2+</sup>-activated phosphors through doping-free exploration of hidden sites

Dongkai Hu, Mavlanjan Rahman, Shuifu Liu, Lina Shen, Pengpeng Dai,\* Dawei Wen\* and Mingmei Wu\*

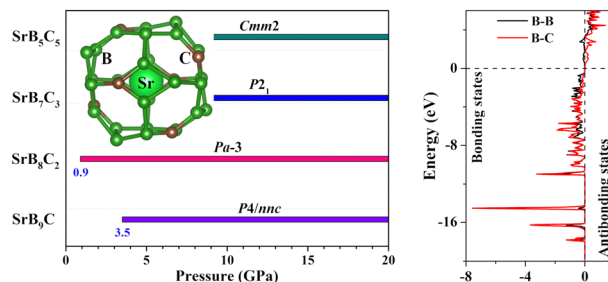


## PAPERS

8153

Theoretical exploration of novel boron–carbon clathrate in Sr(B,C)<sub>10</sub> at high pressure

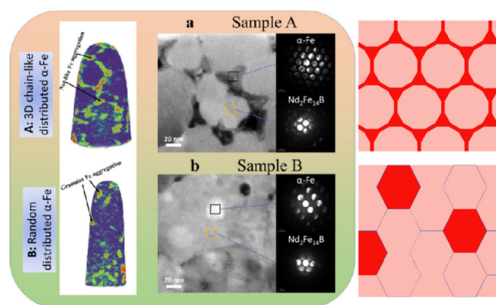
Dandan Zhang, Yangfan Cui, Miao Zhang,\* Xin Chen\* and Hui Wang\*



8161

Matching the experimental chemical composition configuration and theoretical model in Nd<sub>2</sub>Fe<sub>14</sub>B/ $\alpha$ -Fe nanocomposites to improve coercivity

Yuqing Li, Jinjin Wang, Manying Liu, Xuerui Xu, Mengying Bian,\* Weiqiang Liu, Dongtao Zhang, Hongguo Zhang and Ming Yue\*



## CORRECTION

8172

## Correction: Tuning quantum interference through molecular junctions formed from cross-linked OPE-3 dimers

Bashayr Alanazi, Asma Alajmi, Alaa A. Al-Jobory, Colin Lambert and Ali Ismael\*

